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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,354	09/13/2004	Robert GLOSSER	000463-203	5353
29306	7590	04/07/2005	EXAMINER	
MARSTELLER & ASSOCIATES, P. C. P. O. BOX 803302 DALLAS, TX 75380-3302			PERRY, ANTHONY T	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/711,354	Applicant(s) GLOSSER ET AL.	
	Examiner Anthony T. Perry	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 1,2,6 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/13/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 1-2 and 5-6 objected to because of the following informalities: in claim 1, lines 3 and 4, replace “a substrate layer” with --a substrate-- so that they match the later reference to said part in line 6 as well as in line 1 of dependent claim 2;

In claim 6, line 3 replace “a substrate layer” with --a substrate-- so that it matches the later reference to said part in line 5 as well as in line 1 of dependent claim 7.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 6 rejected under 35 U.S.C. 102(e) as being anticipated by Kinoshita et al.
(US 6,670,752).

Regarding claim claim 1, Kinoshita teaches a photocathode manufacturing intermediate article comprising a substrate (5c) and an active layer (5d) including photoemissive alkali antimonide material epitaxially grown on the substrate (5c) (See for example Fig. 1 and col. 5, lines 25-29).

Regarding claim 6, Kinoshita teaches a method for making a photocathode intermediate article comprising forming an active layer (5d) carried by a substrate (5c), wherein the active

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layer (5d) includes photoemissive alkali antimonide material epitaxially grown on the substrate (5c) (See for example Fig. 1 and col. 5, lines 25-29).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al. (US 6,670,752) as applied to claims 1 and 6 above, and further in view of Kan et al. (US 6,831,341).

Regarding claims 2-3, Kinoshita does not specifically teach the use of a spinel substrate. Kinoshita et al. disclose the use of a nickel substrate. However, it is well known in the art that there are two types of photocathodes depending upon the requirements of the photo-tube in which they are to be used. The first is the reflective-type, as taught by Kinoshita et al., having an opaque surface with the light falling on the same side from which electrons are emitted. The second is the transmission-type having a semi-transparent surface with the exciting illumination falling on the back film through the supporting glass and the electrons emitted from the opposite side.

Kan et al. teach MgAl_2O_4 being a suitable substrate for a photocathode of the transmission-type (see for example col. 13, lines 1-11). Accordingly, where a transmission-type photocathode is desired, it would have been obvious to one of ordinary skill in the art at the time

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the invention was made to have used MgAl_2O_4 as the substrate instead of nickel. MgAl_2O_4 is a spinel that has a lattice constant of 8.083\AA .

Regarding claims 7-8, Kinoshita does not specifically teach the use of a spinel substrate. Kinoshita et al. disclose the use of a nickel substrate. However, it is well known in the art that there are two types of photocathodes depending upon the requirements of the photo-tube in which they are to be used. The first is the reflective-type, as taught by Kinoshita et al., having an opaque surface with the light falling on the same side from which electrons are emitted. The second is the transmission-type having a semi-transparent surface with the exciting illumination falling on the back film through the supporting glass and the electrons emitted from the opposite side.

Kan et al. teach MgAl_2O_4 being a suitable substrate for a photocathode of the transmission-type (see for example col. 13, lines 1-11). Accordingly, where a transmission-type photocathode is desired, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used MgAl_2O_4 as the substrate instead of nickel. MgAl_2O_4 is a spinel that has a lattice constant of 8.083\AA .

Claims 4-5 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al. (US 6,670,752) as applied to claims 1 and 6 above, and further in view of NPL document, "Scanning electron diffraction studies on alkali antimonide photocathodes, including S20".

Regarding claims 4-5, Kinoshita et al. teach cesium antimonide as a suitable alkali antimonide for the active layer. Kinoshita et al. do specifically state that the alkali antimonide material is in a cubic phase and has a lattice constant between 7.73 and 9.18\AA .

However, page 3 of “Scanning electron diffraction studies on alkali antimonide photocathodes, including S20” (labeled page 71) teaches that maximum photoemission always corresponds to the most definite crystal structure. For cesium antimonide, maximum photoemission exists in the cubic phase with the lattice constant equal to 9.14 Å. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the alkali antimonide of the Kinoshita reference be in cubic phase with a lattice constant of 9.14 Å so as to maximize photoemission of the photocathode.

Regarding claims 9-10, Kinoshita et al. teach cesium antimonide as a suitable alkali antimonide for the active layer. Kinoshita et al. do specifically state that the alkali antimonide material is in a cubic phase and has a lattice constant between 7.73 and 9.18 Å.

However, page 3 of “Scanning electron diffraction studies on alkali antimonide photocathodes, including S20” (labeled page 71) teaches that maximum photoemission always corresponds to the most definite crystal structure. For cesium antimonide, maximum photoemission exists in the cubic phase with the lattice constant equal to 9.14 Å. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the alkali antimonide of the Kinoshita reference be in cubic phase with a lattice constant of 9.14 Å so as to maximize photoemission of the photocathode.

Other Prior Art Cited

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mahoney et al. (US 4,896,035) and LaRue (US 5,475,227) read on claims 1 and 6.


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Contact Information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is (571) 272-2459. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-24597. **The fax phone number for this Group is (703) 872-9306.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JOSEPH WILLIAMS
PRIMARY EXAMINER

Sur


Anthony Perry
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April 4, 2005

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